

C l a i m s

1. Antenna system for a ground penetrating radar, comprising two plate-shaped antenna devices which are 5 connected (14) with each other by adjacent edge structures (12,13) and which during operation are orientated to have a downwards slope from said edge structures (12,13), wherein the two antenna devices respectively comprise at least two orthogonally mounted transmitter antenna elements (1,2) and at least two orthogonally mounted receiver antenna elements (3,4), in which the antenna elements (1-4) in each antenna device consist of monopoles formed by metal surfaces being applied to an electrically insulating plate carrier (6) that is located on the bottom 10 side of a layer of radar absorbing material (7), in which the upper surface of the absorbing material (7) is covered by a metallic ground plane (8).
2. Antenna system in accordance with claim 1, wherein 20 the plate carrier (6) is a laminate, in particular a printed circuit board laminate, preferentially consisting of a fibreglass substrate.
3. Antenna system in accordance with one or more of 25 claims 1-2, wherein the antenna elements (1-4) have a triangular shape.
4. Antenna system in accordance with one or more of claims 1-3, wherein the antenna elements (1-4) are mounted 30 with a 45 degree angle to the symmetry axis (5) between the two antenna devices.

5. Antenna system in accordance with one or more of claims 1-4, wherein the angle (α) in the vertical plane between the two antenna devices can be adjusted by a hinge (14) connecting said edge sections (12,13) to each other.

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6. Antenna system in accordance with one or more of claims 1-5, wherein the transmitter antenna elements (1,2) serve for transmission of electromagnetic waves with two orthogonal polarisations (A and B, respectively), and the receiving antenna elements (3,4) serve for reception of electromagnetic waves having the same two orthogonal polarisations (A and B, respectively).

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7. Antenna system in accordance with one or more of claims 1-6, wherein the feed points (9) of the antenna elements (1-4) are located in their respective metal boxes (12,13) at said edge structures of the two antenna devices, wherein each metal box (12,13) besides containing the electronics (20,30) of the radar also comprises a fixture for the plate carrier (6) and the ground plane (8).

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8. Antenna system in accordance with one or more of claims 1-7, wherein the outer edges of the antenna elements (1-4) are connected to the ground planes (8) through resistors (10) and spacers (11).

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9. Antenna system in accordance with one or more of claims 1-8, comprising several transmitter antenna elements and several receiver antenna elements forming an array of antenna subgroups distributed along the symmetry axis (5) between the two antenna devices, wherein each antenna subgroup consists of two transmitter antenna elements (1,2) and two receiver antenna elements (3,4).

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10. Antenna system in accordance with claim 9, wherein at least some of the antenna subgroups overlap each other, wherein the overlapping neighbour antenna elements (2,16) are separated in each intersection by an electrically insulating material (17).

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